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Nicolas Douay, Christian Lamker

NEW TECHNOLOGIES, NEW TOOLS, NEW ORGANISATION OF THE CITY: TOWARDS A NEW DIGITAL PLANNING?

Contents

Abstract
A full digital transformation is unfolding and great hopes are vested in the potentials of digital tools for communication and visualisation in planning processes, for analysing and modelling spatial information, and also for managing whole cities and regions. However, actual practices differ vastly, and the debate increasingly points to the pitfalls and dangers of a disconnect between citizens, spatial justice and democratic decision making. Examples of smart cities show a huge variety of interpretations and implementations in Europe. Therefore, digital tools should not become a goal in themselves, but need a clear societal and spatial vision and open political debates. This chapter looks at digital technologies in spatial planning as an increasingly political agenda in France and in Germany. In many regards, both countries must deal with similar opportunities and challenges posed by digital technologies, companies and global platforms. These are mediated differently through national political and planning systems and a more centralised approach in France versus a much-decentralised agenda in Germany.

Keywords
Digitalisation – smart city – France – Germany – technology – role of planners

1 Introduction: digitalisation of cities and regions

Digitalisation has become one of the dominant forces driving an ongoing transformation of societies, the making and shaping of our cities and spatial planning theory and practice (Colding/Barthel/Sörgvist 2019; Douay 2018; George 2020; Potts 2020; Raco/Savini 2019; Sielker/Sichel/Allmendinger 2019). A full digital transformation is unfolding: entire economies, the flow of goods, the provision of public and private services, political debates and social contacts are digitalising. Great hopes are vested in the potentials of digital tools for communication and visualisation in planning processes, for analysing and modelling spatial information, and also for managing whole cities and regions. In effect, the digital is pervasive (Boullier 2016): it cannot be located

because it penetrates all our activities, from the most intimate to the most collective. It affects the way in which we perceive, use and transform urban and regional spaces and brings forward notions of smart cities, smart villages and smart regions. In sociological terms, 'smart cities bring form–function tight-fit into the digital age, aiming to become self-sustaining environments' (Sennett 2018: 161).

More than any previous time, the COVID-19 pandemic has shown the great potentials of digital communication for staying connected and organising public life from local communities to global networks. Smart cities have become even more prominent as an ideal type of an efficient, sustainable and environmentally friendly future city. This goes so far that it is possible to see hybrid spaces (such as augmented reality and gamified environments) emerging in which the real and the virtual merge (Yamu/Poplin/Devisch et al. 2017). New technologies and tools are being developed and used, but to an even greater extent basic assumptions and the organisation of urban space is changing. Smart cities mean that 'technology is a central feature in cities that can spark urban regeneration and increase urban efficiency' (Hatuka/Rosen-Zvi/Birnhack et al. 2018: 161). The ongoing process of intertwining digital technologies with spatial planning raises questions about accountable decision making and local democracy, which is in danger of being replaced by an 'algorithmic technocracy' with new powerful governing elites (Kitchin/Coletta/Evans et al. 2019: 210). New generations of digital technologies offer more than analytical tools and increase the risk of a disconnect from citizens, spatial justice and democratic decision making. The debate increasingly discusses the pitfalls and dangers of digital technologies becoming cornerstones of all elements of spatial planning, communication and decision making.

Planners and (digital) city making

In traditional accounts of city making, planners and urban designers play a crucial role with their tools and instruments, but also with their designs and visions (Sennett 2018: 19 et seq.). After industrialisation in the 19th century, European cities witnessed both engineering solutions (such as sanitation) and also architectural answers (such as Bauhaus). Post-war reconstruction led to large-scale comprehensive planning and the rational planning model. Best decisions were developed by experts and through rational analysis. This approach was later supplemented by communicative and collaborative planning ideals and an orientation towards citizens and participatory planning processes. Best decisions were facilitated in open dialogues oriented towards consensus. Since the later 20th century, planners have paid much attention to strategic planning as a means to foster the interaction between private actors and governments. Public and private resources are brought together to develop and implement projects. All these approaches have in common that they are about planners as city makers and the role they play in organising and shaping spaces. Without the specific role played by planners, cities are not made in industrialised countries.

The trend is becoming more diverse today. New emerging forces impact city making, often stronger than established approaches of governing cities. Digital technologies are framed as providing solutions to all urban problems (Kitchin/Coletta/Evans et al. 2019: 199). Technologies change the way in which we use space and how we move in space. Global digital platforms shape forms of living, travelling and moving around. Examples are multi-local living, home-sharing, co-working, e-scooters, ride-sharing

services and many more. Smart cities combine urban sensory with sophisticated technology to optimise cities and urban flows, mostly using central management mechanisms. Smart city definitions encompass definitions of open and co-productive cities in which people engage with data in real time and build up a diversity of buildings and street designs (Sennett 2018: 254). In contrast, they also cover scenarios of an automated management of urban issues that is highly prescriptive and closed, and that leaves people as passive users (Kitchin/Coletta/Evans et al. 2019: 201). They have in common that technological tools, urban sensory and big data drive comprehensive urban change without providing a specific position for planners. In fact, the hope is that smart algorithms might deliver the better decisions that people strive for. Vast financial investment and technological knowledge produce a diverse landscape of applications and are shifting power to technology companies. The search for a new 'material-virtual interface' (de Roo/Yamu 2017: 34) even changes the language of planning and is a starting point for re-positioning planners in the complex process of city making.

(Re-)positioning planning

Picon (2015) notes that the ideal of the smart city is often presented as an opposition between a search for efficiency, especially in terms of infrastructure management, and a broader vision which would also seek to promote exchanges and a better quality of life. From this perspective two approaches can be distinguished. First, a critical one, advocated for example by Greenfield (2013), notes that smart city projects (mainly the examples of Masdar in the United Arab Emirates, Songdo in South Korea and PlanIT in Portugal) are part of a capitalist logic that perpetuates economic growth by providing new markets for the largest private groups (such as IBM, Cisco, Veolia, Dassault, General Electric, Siemens, Phillips), but do not meet the real needs of citizens. Second, a more optimistic approach notes that the use of new information and communication technologies improves quality of life and the resolution of environmental problems (Scholl/Scholl 2014; Caragliu/Del Boy/Nijkamp 2009; Giffinger/Fertner/Kramer et al. 2007). The first approach is cyberoptimism and sees the emergence of the internet as a possible development towards a more open society in the service of a direct democracy where citizens could participate more freely. The second is a cyberpessimism approach, diametrically opposed to the first and seeing the internet as a technical development in the service of a new technical elite, which responds to the interests of large private groups and prevents the participation of those who are not technologically up-to-date, or even organises a generalised monitoring of behaviours. This divide between cyberoptimism and cyberpessimism recalls Mumford's (1970) vision of the risks that accompany the deployment of industrial civilisation, where the promises of modern technology would be betrayed by an authoritarian 'megamachine'. In other words, it is an issue of distinguishing between utopia and catastrophism.

Existing debates acknowledge an often-unquestioned belief in smart technologies by public decision makers and ask for more evidence and informed discussions. Countries with a strong democratic tradition struggle to position themselves between cyberoptimistic and cyberpessimistic visions of the future, or what Sennett (2018: 254) calls a coordinative (open) and a prescriptive (closed) smart city. The two largest countries in Europe, Germany and France, both follow policies to support

smart cities, and also smart villages and regions. This chapter aims to make the distinction between, and even to go beyond, the traditional divide between optimism and pessimism as regards the impact of digital technologies on spatial planning and on our societies.

Compass of digital planning

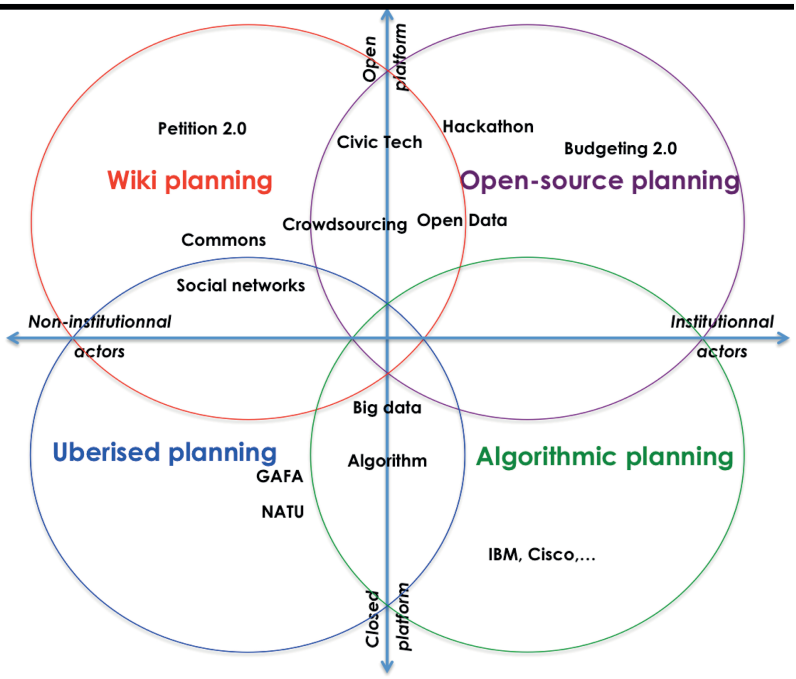

Figure 1: Planning the smart city / Source: Douay 2018: 148

Douay (2018) has identified four potential types that are already emerging (see Figure 1). More than previous planning approaches, smart cities allow for open planning approaches that are dynamic and that include a variety of institutional and non-institutional actors. If digital infrastructure, knowledge and access are provided, the 'wisdom of the crowd' could be efficiently and democratically used by open governments. On the other hand, demands to establish technological foundations and to run the smart city also show processes of closure by operators of digital platforms and technology companies. The oldest platform used to decide upon public issues, the public space (Greek: *agora*) and its successors in the form of town halls and physical public meetings might be replaced by new platforms – or by just one.

This leads us to the following questions: What is the situation regarding the realisation and use of digital technologies in spatial planning in France and Germany? In both countries, 'smart cities' are anchored in public policy. Is 'smartification' likely to produce an even more powerful digital divide, strengthening populations that are able

(financially, intellectually) to participate in the use of technologies? In other words, will it lead to a more or less egalitarian society especially in the context of the development of digital economy platforms (e.g. Uber, Airbnb) that have an impact on the ability of public actors to plan the city? How will it change the planning methods of the built environment with the development of tools related to algorithms and artificial intelligence? Could it change the processes of citizen participation and the dynamics of city governance? These questions are part of a dynamic debate and this chapter aims to contribute to the development of productive future uses of digital technologies in spatial planning.

2 Digital technologies in spatial planning in France and Germany

The following sections investigate France and Germany and their digital policies for cities and regions. In both countries, the term smart city has a central position in naming efforts to integrate digital technologies in spatial planning and the organisation of cities and other parts of the wider territory. The first section of each sub-chapter introduces smart cities on the national urban agendas. The second part outlines recent policies and strategies and provides an overview of the status of use and implementation of smart cities. This part shows the meaning of *'smart'* in both countries, what smart policies emphasise and where they differ from previous urban and planning policies. The review focuses on recent years in which dynamic change has been observed. In 2014, a study conducted for the European Parliament found less than 50% of all cities in France and Germany displayed smart city characteristics, and ranked both countries way behind most large European countries (European Parliament 2014). The third section delivers specific examples that show the bandwidth of recent applications in both countries. The variety of uses opens up space for discussing potentials and pitfalls and (re-)positioning planners in smart city agendas (see Section 3).

France

Following the French institutional context and public policy traditions, the issue of digital technology in regional planning in France was first considered from the point of view of equipment (Debrie/Douay 2016). The deployment of new infrastructures was thus approached in the same way as more traditional networks such as the train or the phone. The challenge was therefore to connect the national territory to the internet network by following the different technological standards offering increasingly high speeds. Indeed, the mainstream use of the internet started only in 1994 and was truly democratised at the beginning of the 21st century with the advent of faster connections and then high-speed broadband in the last ten years.

The digitalisation of the French territory thus reflects the way in which spatial planning policies are evolving under the contemporary prism of equality between territories. This became an object of national public policies intended to connect citizens to the most modern technologies, as had already been the case with the telephone in the 1970s and with the mobile phone at the end of the 1980s. The state launched the Very High-Speed Broadband Mission in November 2012, and a national strategy was

adopted in February 2013. This strategy aimed to achieve 80 % coverage of the territory with very high-speed broadband by 2022 (today the objective is for 2025) thanks to a total investment of 20 billion euros. In the current context of a shortage of public finances, the plan is based on the search for coherence between the public initiatives of the state and the local authorities and good coordination with the private investments of operators. This plan follows the main objective of equality between territories, which became a central point of the national planning narrative in 2012 with the idea of achieving equality between larger cities and rural areas with lower densities. For digital issues, the main challenge is to address the digital divide by reducing the amount of 'white zones' with no digital connectivity. This policy is based on a sharing of space between national operators. The most profitable and least costly areas to cover were defined in return for subsidies to local authorities in the areas that are most expensive to equip and where the prospects of profitability are remote. As a result, financial aid to territories is proportional to their 'rurality' rate. More concretely, territorial digital plans were introduced in 2009 in a law on 'the fight against the digital divide'. These plans are thus added to the corpus of planning documents for major infrastructure. These operational documents define an objective and, even if they are optional, their existence conditions state financial support for local authority projects through the *Fonds d'aménagement numérique des territoires* (FANT – Digital Territorial Development Fund).

The digital divide approach in the construction of digital public policy therefore allows us to observe a very interesting and innovative method of deployment in rural areas, involving a bottom-up perspective by local actors from the public sector but also including the private sector and civil society. In this context, we can mention the 'Smart City versus Stupid Villages' report of 2016 by the *Caisse des dépôts* (Savings Bank), which served as a call to mobilise elected officials to consider digital technology as a catalyst for development in order to encourage innovative projects. We can also mention the networking of local initiatives through the association Internet Cities with their online atlas of more than 2100 local authorities who share 35,000 digital initiatives; the association also awards a label to the local authorities with the most innovative initiatives (following the traditional floral town label). There is thus a strong appropriation of 'smart' perspectives, as reflected in the proactive policy and initiatives by private and civil actors where digital technology provides answers to the specific challenges of rurality (dematerialisation of public services, withdrawal of local services, ageing of the population).

In urban areas, the concept of the smart city is as popular as it is in other Western countries. Thus, the city of Montpellier entrusted IBM with the task of setting up urban control and management tools for a few years, while Nice developed a partnership with Cisco, and finally Angers now has a similar project with ENGIE. There is also experimentation with innovative urban projects that combine smart and ecological dimensions. This is the case in Issy-les-Moulineaux near Paris, which is a pioneer in the deployment of new technologies (Douay 2018). Thus, in 2014, the European Commission and the Chinese Ministry of Industry and Technology published a study on smart city projects implemented in 15 Chinese and 15 European cities. In this ranking, only two French cities – Lyon and Issy-les-Moulineaux – were singled out.

Indeed, as early as 1995, the municipality of Issy-les-Moulineaux deployed the internet in its libraries, created a digital public space and began to establish more direct links between citizens and the administration, with information sharing (the city was the first to broadcast city councils online) and the possibility of requesting documents. The use of new technologies also concerns urban projects with the creation of a smart grid. The IssyGrid project aims to be a full-scale laboratory for experimenting with these new technologies. It was created at the initiative of the municipality and brings together a large number of (often French) urban players such as Bouygues, Alstom, EDF, ERDF, Microsoft, Schneider Electric, Steria and Total, as well as many innovative start-ups. This eco-district in the city's former military fort aims to create 2,000 housing units for 5,000 inhabitants as well as 160,000 m^2 of office space for 10,000 employees.

In the institutional practice of planning, digital technology is not (yet) integrated into the hierarchy of legal regulations. However, we are seeing the development of strategies that focus wholly or partly on digital approaches. The digital issue is part of wider debates on the evolution of spatial planning practices with the emergence of transitions towards a more sustainable and resilient city (Douay/Minja 2021), so the digital is often presented as one of the possible and complementary paths, with the digital transition complementing the ecological, social, energy and/or democratic transitions. This is the case with the strategic plan *Paris intelligent et durable* (Intelligent and Sustainable Paris) which was prepared in 2015 with the ambition of transforming Paris into a digital city, based on a new method that systematically values citizen participation and co-construction: '*Les citoyens doivent être au cœur des projets simplement parce qu'ils vivent la ville au quotidien. La co-construction des projets avec toutes les parties prenantes, l'ouverture des données publiques, le soutien sans faille à l'innovation et l'implication personnelle des citoyens pour réagir et proposer des idées sont des éléments essentiels pour construire la ville de demain. Le socle de la ville intelligente conçoit la ville ouverte, comme une plateforme sur laquelle les entrepreneurs, les associations et les citoyens peuvent se connecter.*' ('Citizens must be at the heart of the projects simply because they live the city on a daily basis. The co-construction of projects with all stakeholders, the opening of public data, the unfailing support for innovation and the personal involvement of citizens to react and propose ideas are essential elements for building the city of tomorrow. The foundation of the intelligent city is the open city, which is conceived as a platform on which entrepreneurs, associations and citizens can connect') (Gonguet/Rolland 2015). Furthermore, the case of the European Metropolis of Lille is also remarkably interesting with its '*résolument numérique*' 'resolutely digital') strategy. This proposes a shared ambition to give greater visibility to the actions of a group of public and private players involved in the digital transition.

Germany

The start of a deeper focus on information and communication technologies in planning was already seen in the mid-1990s (Ravin 2020; Wiegandt 2018: 958). However, it is widely acknowledged by private and public actors in Germany that the country was slow to embrace digital and smart city policies across all scales of government. In 2019, 95.4% of all German households had access to broadband

connections with at least 16 Mbit/sec, an increase from 87.2% since 2015 (BMVI 2019: 2 et seq.). However, broadband coverage differs vastly between urban areas (99.0%, ca. 23.2 million households), semi-urban areas (93.7%, 13.8 million households) and rural areas (81.9%, 4.4 million households). Germany has witnessed intense engagement in providing the necessary digital infrastructure for smart cities and regions in spatial development and planning policies, though the provision of basic infrastructure was first left to infrastructure providers without guidance from a digital agenda. The federal structure with the guaranteed local self-autonomy of cities and municipalities (Article 28 of the Basic Law) has allowed a multiplicity of ideas and projects. But it has also led to scattered policies, their incoherent implementation, and problems with scaling up good examples. In 2003, initial work began on developing a standard for data collection, management and exchange on planning and building. Since 2017, all public authorities are obliged to work towards using the open standards XPlanung and XBau by 2023, with the aim of making processes smoother, more efficient and more transparent (Leitstelle XPlanung/XBau 2018). Furthermore, four pilot projects, funded by the Federal Ministry for Transport and Digital Infrastructure, have worked on establishing Building Information Modelling (BIM) since 2017 and aim to mainstream it from 2020 onwards for infrastructure and related projects (BMVI 2020). Such standards, open data and interfaces are the groundwork necessary to digitalise planning processes more broadly.

The term smart city emerged mostly in connection with technological infrastructure (broadband connections), the energy transition (smart grids, smart metering), mobility (multimodal transport), and the digitalisation of production (industry 4.0), administration (digital town hall) and communication (social media). More recently, the focus has shifted to include public services, the cohesion between urban and rural areas, supporting equivalent living conditions and a focus on citizen participation. The smart city agenda has broadened to also address inequalities and divergent dynamics within the country and to act as a vehicle to support disadvantaged regions. The coalition agreement of the three ruling parties (electoral period 2017-21) points out the two most important aspects of federal policies: to implement pilot projects and to support cities in their efforts (CDU/CSU/SPD 2018). This explicitly covers smart cities, the Smart Rural Area and relations between cities and hinterlands, but also European and international competitive successes (CDU/CSU/SPD 2018: 47). Furthermore, federal government commits itself to continuing the dialogue platform for smart cities and to funding model projects (ibid.: 113). The major goal is to improve life for all citizens, to hold together the whole country, to take it forward safely and to take up responsibility in Europe and the world. The dialogue platform comprises 70 members of federal ministries, cities and civil society. In 2017, their engagement led to the Smart City Charter that builds the basis of federal engagement until today (BBSR 2017a). This charter aims to develop intelligent cities, building upon the idea of the European City outlined in the Leipzig Charter (BMU 2007) and the New Urban Agenda (UN 2016). Since 2019, the German government has funded 13 model projects throughout Germany in four categories (BMI 2019): large cities (four projects), medium-size cities (three), small cities and villages (four) and intermunicipal cooperations (three). This mirrors the search for a diversity of smart practices. The second round of projects will focus on public interest and the network city / city networks from 2020 onwards (BMI/KfW 2020: 1).

Beyond these federal efforts, many associations and networks involving public institutions, universities, research institutes and private companies are involved in smart city projects. The *SmartCity Kompass* (Smart City Compass), based in Hamburg, outlines projects on big data, the Internet of Things, artificial intelligence, robotics and more. Furthermore, numerous private actors, associations and research institutes engage in developing or providing smart city solutions, like Deloitte Smart Cities (Deloitte 2020), *Bundesverband Smart City* (Bundesverband Smart City 2020) or *Fraunhofer Morgenstadt* (Morgenstadt 2020). Research, development and implementation projects are often conducted by research institutions or university departments that did not engage much with spatial development and planning policies beforehand.

In 2019, Germany's digital association (*Bitkom*) introduced the Smart City Index 2019 by stating that there is a spirit of departure for smart cities throughout the country (Bitkom 2019: 4). The association represents more than 2700 companies of the digital economy. The analysis included the 81 cities in Germany with more than 100,000 inhabitants and ranked them according to a set of 35 indicators and 96 criteria. Among the five first places are three of the four German cities with more than one million inhabitants (namely: Hamburg first, Berlin fourth, Munich fifth). The study indicates that cities with distinct personnel (chief digital officers), universities and digital strategies score much better; these features are more often found in large cities (ibid: 19 et seq.; European Parliament 2014: 9).

Most high-ranked examples or those that are called 'best practices' have been supported by research projects on state, federal or European level. An important point of departure for Hamburg's smart city agenda has been the mySMARTLife project. Hamburg achieved the status of an EU Lighthouse City with Helsinki and Nantes in 2016 (Späth/Knieling 2018: 346). This project also outlined the necessity to develop legitimacy for smart city policies, to engage with individual citizens and to critically support governance processes. Hamburg first published its strategy for a digital city in 2015. A major update with a new digital strategy was finished in January 2020 with a focus on making Hamburg a fully 'digital city' (Senat Hansestadt Hamburg 2020). Another often-mentioned recent example is the living lab *Lemgo Digital*, run by Fraunhofer in the medium-sized city of Lemgo (41,418 inhabitants) in the state of North Rhine-Westphalia. The focus of this initiative is on mobility, the environment and an attractive inner city. For rural areas, a good example is the initiative *Digitales Dorf* (digital village), funded by the state of Bavaria since 2017 with five pilot regions. The project is a joint research initiative between TH Deggendorf and groups within the Fraunhofer association. The digital village Spiegelau-Frauenau (Spiegelau: 3,990 inhabitants, Frauenau: 2,713 inhabitants) focuses on providing better living conditions for elderly people with digital solutions, health services in rural areas and a central online platform (Dahoam 4.0) for all inhabitants to support community life. The project targets citizens in their individual living and health conditions as well as fostering a stronger relation to public institutions and services (in this case schools, local village buses and town halls). The broad use of the term 'smart city' entails the danger of it becoming a marketing label that does not yield long-term sustainable

effects (Soike/Libbe 2018: 24). The most recent German debate frames smart city agendas as part of a political and deliberative process that uses technology to benefit the quality of life of all citizens and equivalent living conditions in different regions.

3 Positioning planners in smart city agendas

Smart city agendas crystallise the use of digital technology for more purposes than simply as an analytical tool (such as Geographical Information Systems). Furthermore, they aim to extend the scope of such approaches beyond a focus on digital technologies as a single means and end. This section looks more closely at smart city agendas and examples in France and Germany. It adopts a spatial planning perspective in two steps. First, it sets out where existing planning institutions and strategies take up smart city ideas and how the 'smart' is framed from a planning perspective. The second part then looks at upcoming uses in spatial planning, in discussing spatial plans and in public communication and citizen participation. It sets out the processes of digitalisation in planning itself and the implications for the role of planners.

France

Local actors are using and abusing the term 'smart city' to put forward new imaginaries and new innovative tools. So, planning organisations are already integrating solutions to represent the territory and its environmental issues and simulate development projects in 3D. We also note the development of many start-ups that propose the use of an algorithm to help landowners, real estate professionals and local authorities to identify land opportunities, their constructible potential and their availability. These tools allow the calculation of real estate project opportunities based on real estate market databases and socio-economic activities. These innovations are often supported by public authorities, for example by the French Tech operation which serves as an incubator for these new companies at the national and metropolitan levels. But the start-ups do not always find a market to secure their services and it is often the evolution of regulations that makes it possible to perpetuate such tools, like with the open government movement.

Indeed, some of these innovations are made possible by the democratisation of the different levels of the administration with the opening and transparency of data and especially of decisions. Today, the French approach has three objectives: to improve democratic functioning, to enhance the effectiveness of public action, and to propose new resources for economic and social innovation. The adoption of the Digital Republic Act in 2016 made data openness the rule for all administrations and local authorities, including the various urban plans and all the legal requirements associated with them. In practice, at the national level, the opening of data is sometimes complex when data have usually been monetised. At the local level of urban planning documents, constant progress is seen on the websites of local authorities and, in addition, a national portal makes it possible to centralise all the land-use plans.

More broadly, the government has embarked on a dematerialisation process for the entire procedure of urban planning authorisations, from the user applying for a building permit to the processing of the application. Deployment is ongoing, but it

opens up new perspectives for the integration of BIM solutions on large scales, thus systematising the creation of a digital duplicate of the map and the city using City Information Modelling (CIM) like the platform *3DEXPERIENCity/Virtual Rennes* made by Dassault Systèmes in Rennes.

Online platforms are also used for the participation process during the preparation or modification of various urban plans. For example, when the City of Paris decided to update its *Plan local d'urbanisme* (PLU – Local Urban Plan) all Parisians were invited to give their opinions on planning principles at public meetings associated with exhibitions. In addition to this classical consultation, an innovative online collaborative platform known as *Imaginons Paris* (Imagine Paris) was made available to the public. This initiative is part of the participatory mapping movement with the flagship example of Open Street Maps. These maps are communicated through different socio-technical devices that correspond to multiple degrees of openness, with a degree of tension between the map-support to participation and the map-product of participation. The first allows 'understanding' and brings together a wide range of information and documentation. The second enables 'participation' through different devices. Within three months, the site generated 22,838 visits, with 88,553 page views. A total of 2,268 contributions and comments were assembled, of which 981 were from public meetings: 60% from the debate part and 40% from the interactive map part; in addition, 154 questions were asked via the online contact form. Regarding the 1,287 online contributions, there is a tripartition in the use of the site, with 3.6% of visits leading to a contribution, 1.3% to comments and, thus, more than 95% of visits that do not give rise to any concrete action.

Today, digital is at the heart of many narratives on urban development. The changes are numerous, often widespread but still quite significant. The digital city allows the advent of more sustainable or participatory urban planning with a new narrative, but it is also more often subject to the influences of large private groups or the temptations of citizen surveillance.

Germany

In the German spatial planning debate, the term 'smart city' is still comparatively new and encompasses older attempts at digitalising and harmonising data collection, management and exchange within public administrations. The landscape of actors (private and research bodies) that engage in spatial issues has widened and planning is challenged to position itself in a coordinating role. In the early years, much of the debate was driven by private companies and some frontrunners (Soike/Libbe 2018: 4). Other digitalisation aspects, such as BIM, have not yet scaled up to a larger urban level (BMI 2020). For example, the recent pocket dictionary on spatial development and planning (ARL – 2018) does not include smart city or digital city among the 284 terms and concepts explained. Smart cities are part of information and communication technologies (Wiegandt 2018). For planners, smart cities mean dealing with the consequences of technologies on spatial structures (ibid.: 960). Smart city agendas extend their scale from individual examples to a comprehensive spatial agenda. Studies like Wiechmann/Terfrüchte (2017: 8) point to the benefits of supporting economic development and providing public services, especially in rural areas. The federal

Raumordnungsbericht (Spatial Planning Report) of 2017 makes only a few references to digital and smart city policies. It points to the importance of broadband infrastructure, digital opportunities for mobility solutions (BBSR 2017b: 106) and potentials for providing public services, especially in rural areas (ibid.: 122). This debate on smart villages, smart regions or a smart countryside is the most recent one. A major task is still to connect especially low-density rural areas to high-speed internet connections (BMVI 2019).

The most recent call for model projects of smart cities in 2020 uses an encompassing definition of smart cities that almost mirrors definitions of sustainable and participatory planning (BMI/KfW 2020: 1). The importance that is given to actors, networks, responsible development and its social, economic and spatial consequences in a network of cities could put planners in a central managing role. However, whereas smart city agendas usually refer to spatial aspects, they focus less on spatial plans. The smart city is framed as a city of movement, of flows and of connections – both in large cities like Hamburg and in medium-size cities like Lemgo. Open, adaptive, flexible, agile, even algorithmic management challenges the established roles of planners in cities. Large platform operators like Airbnb, Uber and, in 2019, the emergence of e-scooters in most larger cities have proved how spatially relevant large platform operators can be and how difficult it is for local authorities and planners to provide coherent answers. Furthermore, the digitalisation of citizen participation and planning processes themselves and the use of virtual and augmented reality are agenda points for the upcoming years (Dembski/Wössner/Letzgus et al. 2020), probably much boosted by the COVID-19 crisis in 2020.

The *Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen* (WBGU – German Advisory Council on Global Change) entitled its recent flagship report 'Towards our Common Digital Future' (WBGU 2019) and proposes 'a holistic approach to digitalization in the context of the sustainable development of our civilization, which is under threat from many sides – an approach that has been missing up to now' (ibid.: 1). The report reminds federal government to include dystopian and utopian discourses in an extended view on sustainability and human beings therein (ibid.: 4), with an especial emphasis on positioning human dignity at the core of a process to make digitalisation sustainable (ibid.: 17). At the same time, the German academic planning debate also analyses the downsides of smart cities, emergent injustices, privacy and tracking concerns, and problems with an open city and local democracy and control (Novy 2015; Bauriedl/Strüver 2018).

4 Smart cities and regions in the making – a comparative view

Smart city and spatial planning agendas started as separate agendas that slowly intertwined. The following section will look at four main aspects of smart cities in comparison. Attention is then directed to more specifically uncovering the role of planners in these policies. Smart cities are an increasingly political agenda in France and in Germany. Developing smart cities has extended from the increased use of technologies and pilot projects to a comprehensive agenda. In many regards, both

countries must deal with similar opportunities and challenges posed by digital technologies, companies and global platforms. On the other hand, these are mediated differently through national political and planning systems and a more centralised approach in France versus a much-decentralised agenda in Germany.

Smart cities in comparison

Regarding digital platforms (such as Airbnb, Uber, Bird) and emerging start-ups, both countries are characterised by a scattered landscape of reactions. Some digital start-ups, e.g. in the field of multimodal mobility and the Internet of Things (IoT), provide high user value and high potential for organising cities. Others, e.g. in the field of rent sharing and ride sharing, are intensively contested for their effects on urban development. Many initiatives have started to regulate or control platforms, but cities struggle to keep up with change and spatial impacts. Spatial scales diverge between global companies on the one hand and decentralised local reactions on the other. Second, large technology companies (such as SIEMENS and Dassault), big construction groups (like Vinci and Bouygues), energy companies (like EDF and ENGIE) and associations of these companies (such as Bitkom in Germany and AFNUM in France) are continually active in France and in Germany promoting, developing and implementing smart city ideas. They are strong and powerful actors who work with research bodies and explore technological options that provide a business model. Many such initiatives are in large international cities or the wealthier parts of the countries (e.g. Hamburg in Germany and Paris, Lyon or Nice in France). Commitment and investment are successful in a combination of public or private research, private enterprises and city governments that are committed to technological smart city agendas. In the French context, interaction between public and private is made by state engagement through examples like *La French Tech* which recognises cities for their start-up ecosystems.

A major third part of smart city policies works on citizens, participation and democracy. Governments in both countries have high hopes of more inclusive and participatory developments through smart cities and especially smart villages and smart regions. The more recent German pilot projects focus on demographic change, easing urban/rural divides, the use of new tools for participation and the increasing use of online and social media communication. France has witnessed a similar development that was much boosted by the *gilets jaunes* (yellow vests) protests in 2019. In the aftermath, the big national debate included online fora, and this hybrid system became the standard for every larger reform, such as that of the retirement system more recently. Lastly, smart cities in France and Germany put a strong emphasis on the provision of public services, on open government (e-government) and on public transparency and accountability. This includes strategies to provide open data portals and standardised data exchanges, but also increasing BIM and CIM implementation projects in both countries. France and Germany have national guidelines for their open data policy. Smart city ideas are used to improve decision making with better evidence. They also allow for smoother relations between citizens and public administrations, and the accessing of public administrations without physical contacts (e-government). Such strategies are especially put forward for rural and remote areas, though these areas struggle more with implementation. Smart cities need investment first, both for

infrastructure and software and for enhancing the skills of people involved. Whereas initial projects often started in large cities, the French and German governments now support more projects in small villages.

Planners in smart cities

Planners take four different stances on smart city development. The most established approach is adapting spatial structures to technological developments and the digital transformation of society (Wiegandt 2018: 960 et seq.). Planners are passive actors in that they first observe the ongoing transformation and then adjust with their tools and instruments as much as possible. In Germany, planning instruments foster the provision of infrastructures for a digitalising society and use these to promote equivalent living conditions and the provision of public services (BBSR 2017b). The second option is to build new alliances with research bodies and technology companies to actively use the advantages for planning. Such efforts are often driven by private actors, and focus on technologies (sensors, automation, mobility) and on agendas of economic change and competitiveness. In this way, planners take an active role and participate in processes of decision making where technologically developed answers are increasingly relevant. Initial projects in German cities are starting to make use of urban digital twins and representations in virtual reality, as in the recent case of the town of Herrenberg (31,456 inhabitants) in the state of Baden-Württemberg (Dembski/Wössner/Letzgus et al. 2020). Pilots are moving towards CIM applications and the digital is becoming central to planning as some cities continue to develop strong smart city strategies.

The third approach is to put a strong emphasis on citizens, on public services and on integrated spatial development, and to frame these efforts within a more digital and smart approach. In this way, planners keep a central role in bringing together diverse ideas, mediating them, and taking them forward for spatial change, e.g. in the name of sustainable development (Meschede/Mainka 2020). This approach is at the core of the federal smart city agenda in Germany. The digital is becoming supportive to planning, but it requires distinct knowledge by planners. In France, the *Centre national de la fonction publique territoriale* (CNFPT – National Centre of Territorial Public Service) (in charge of ongoing training for territorial civil servants) has made digital technology one of its training priorities. The fourth stance refers to planners working in public administrations who may well have the most critical opinions of smart city developments. However, though progress differs vastly across cities in France and Germany, there is little evidence of cities and planners deliberately opposing smart city agendas at all.

5 Outlook

The use of digital technologies in spatial planning in France and Germany continues to follow a territorial and comprehensive agenda that differs from the technologically driven agenda of many (early) smart city applications. Smart cities in spatial planning are as much about equivalent living conditions or territorial cohesion as they are about the implementation and use of new technologies. Digital infrastructures and fast and

reliable broadband access are a major precondition for any digital tools and digital ways of organising cities. Providing equivalent access to all citizens in large cities and remote areas remains a cornerstone in France and Germany, with France taking a more centralised approach to implementing smart city ideas and Germany a decentralised one. In both cases, smart city agendas and spatial planning are more closely integrated today than in past years. New technologies and tools have great potential to open planning up to all citizens and to foster a democratic debate. The smart city therefore needs to be an open city, in line with what Sennett also calls a coordinative smart city (Sennett 2018: 164). At the same time, policymakers must be aware of digital divides, both spatially (urban vs rural areas, small vs large cities) and socially (rich vs poor citizens, old vs young people). Digital tools need skilled users who can use them in a public debate for collective decision making, especially if more encompassing tools like BIM and CIM enter planning debates (Sielker/Sichel/Allmendinger 2019).

To position planning and the role of planners in light of the recent generation of digital technologies, digital skills for using tools and for communicating are essential for any future planner. This also represents a task for planning education, which should integrate emerging technologies and be open, experimental and critical towards dynamically evolving technology. Contemporary discussions range from overtly cyberoptimistic (and utopian) scenarios to deeply cyberpessimistic (and dystopian) ones. Combining real and virtual spaces in planning thought, through tools like CIM or digital twins, offers opportunities for an enriched debate of urban futures (Dembski/Wössner/Letzgus et al. 2020; Sielker/Sichel/Allmendinger 2019; Yamu/Poplin/Devisch et al. 2017). At the same time, fears of centralised control, of algorithmic governance and a developing technocracy need to be taken seriously (Raco/Savini 2019; Sennett 2018; WBGU 2019). For spatial planning, it is not only about using new digital technologies. The debate moves towards questions of making planning digital as such.

During the COVID-19 pandemic since spring 2020 everybody's lives and methods of organisation and communication suddenly changed. Partial and full lockdowns due to the spread of COVID-19 have shown the vast potential of a broader and deeper digital transformation. Technology has proved to be a crucial aspect of preparedness for economic and health shocks and vital for immediate reactions. Only digital tools made it possible to organise and stay connected with others, especially in different cities and countries, during lockdown times. This digital potential extended to the development of this chapter in spring 2020. On the other hand, the crisis has underlined the ongoing value of physical human interaction, of meeting people and seeing faces. On the positive side, the coronavirus unveiled solidarity and neighbourhood action and provided a boost for the use of digital tools at all levels of daily life. On the negative side, the crisis opened debates on rising inequalities in society, on the limits of digital education and on dystopias of digital control (e. g. through tracing apps). This simultaneous process of centralising control (in platforms and in large infrastructures) and decentralising action to local collectives and citizens will shape future debates. The pandemic has made it more obvious than any event before that future planning will be digital in all its parts, but that this process needs careful management and the strong involvement of people in cities, villages and rural areas.

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